

it is clear that the right way to solve the problem is for local authorities and School Boards to push ahead, as we believe they can do without fear. The list read by Sir Henry Roscoe at the opening of the proceedings shows what progress in this direction has already been made towards adopting the Act, and the Conference can hardly fail to result in a still more vigorous attempt to make a wise and extensive use of its provisions.

AMERICAN ETHNOLOGICAL REPORTS.

Sixth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution, 1884-85. By J. W. Powell, Director. (Washington: Government Printing Office, 1888.)

FROM the introductory remarks of the Director of the Bureau, we learn that the results of the research prosecuted among the North American Indians, as directed by Act of Congress, were of special interest during the continuance of the work in the fiscal year 1884-85.

As in former years, the labourers in the mound explorations were remarkably successful, more especially in the territories east of the Rocky Mountains, where Prof. Cyrus Thomas, in 1885, and his coadjutors, Messrs. Middleton and Thing, subsequently, made important finds in Indian pottery, which were unique of their kind. Even more valuable are the results of the explorations carried on in New Mexico by Mr. and Mrs. Stevenson, the latter of whom succeeded in obtaining the largest and most important collection extant of objects relating to the sociology of the Zuni tribes. This rare treasury of Indian relics includes specimens of woven fabrics, pottery, stone implements, both ancient and modern, pictured urns, shrines, altars, sacred masks, fetishes, plume sticks, and other objects connected with the ancient mythology and religious practices of these people. Owing to the great variety of the objects, their true character cannot be determined without prolonged investigation, and in the meanwhile they have been deposited in the U.S. Museum, where they await their final classification. According, however, to Mr. Curtis, these, as well as the still more numerous collections of pottery, stone implements, and other objects, amounting to 4000 specimens, which have been obtained in New Mexico, all belong to the indigenous arts and industries of the ancient tribes who occupied the almost unknown tracts of Central America in which the Pueblo Indians are now located.

In the department of linguistic research, prosecuted by the various *employés* of the Bureau, none have perhaps been more successful than Mrs. Ermine Smith, who was fortunate enough to discover two Onondaga MSS., and one MS. in the Mohawk dialect, all of which she has annotated and translated with the assistance of a half-caste of Tuscaroran descent. The origin and history of these MSS. are not distinctly known, but it is conjectured that they are copies of originals which have been lost or destroyed. In their present form, they are, however, alike interesting from a sociological and a linguistic point of view, for while the Mohawk MS. gives an account of the religious rites and chants of the Iroquoian League

which represented the elder members of the entire nation, one of the Onondaga MSS. records the ritual in use among the younger members of the same council, and the other the form of address used by the chief Shaman on the initiation of a newly elected chief.

These curious records have been turned to good account by Mrs. Smith in the completion of her Tuscarora dictionary, and in filling up her vocabulary for the "Introduction to the Study of the Indian Languages" now preparing for publication.

In the Far West, and especially in California, the results of linguistic field-work are not equally satisfactory; and in the latter province, it would appear from the report of Mr. Henshaw, who was charged with the inquiry, that a number of the native dialects are extinct. Only a month before his arrival, an old woman had died who was the last person to speak the language of the Indians of Santa Cruz. The search for still surviving members of the several families of Indian languages current on the arrival of the Spaniards has not, therefore, begun too soon. The general results of these linguistic researches are embodied in a work entitled "Proof-Sheets of a Bibliography of the Languages of the North American Indians." This volume, a quarto of more than 1100 pages, was compiled by Mr. Pilling, and issued in 1884 by the Institute, which, with its usual liberality, has distributed the hundred copies printed to other public institutions, and to the various collaborators in the work.

In turning from the highly interesting explanatory remarks of the Director to the various monographs contained in the volume before us (a folio of more than 800 pages), we have first to notice the comprehensive and profusely illustrated treatise of Mr. Holmes, "On the Ancient Art of Chiriqui on the Isthmus of Panama."

Here the author supplies the technologist with an exhaustive history of the rise and development of plastic and textile art in this part of the continent, while he also treats fully of the literature and geography of this hitherto little-known province, whose position between North and South America imparted to the people some of the characteristics of the civilization of both sections of the western hemisphere.

Almost the whole of the enormous mass of clay and metal objects found in Chiriqui was extracted from tombs in the various *huancales*, or cemeteries, which are scattered over the Pacific slope of the province. These were first made known to science by Mr. Merritt, the director of a gold mine in Veragua, who, on hearing of the accidental discovery of a gold figure in Chiriqui, visited the district, and published a report of his explorations in 1859. From him we learn that in 1858, after it became known that a golden image had been discovered at Bugava, more than 1000 persons flocked to the spot, who it was estimated had in that year collected 50,000 dollars' worth of gold from one cemetery alone, which had an area of only 12 acres. A curious fact connected with the plastic decorations of the Chiriqui vases and other objects is that no vegetable forms have served the artificers as models, animals alone having been used for the purpose, as crocodiles, armadillos, monkeys, lizards, alligators, owing probably to their zoo-mythic conceptions of their divinities. Among the various groups of vases, the one comprising the so-called "alligator ware" is the most interest-

ing; this animal being not only represented as a surface ornament, but serving as a model for the form of such dissimilar objects as whistles, rattles, tables, stools, jars, vases and other utensils. Occasionally the human figure appears under some grotesque form, and less frequently it is used to represent a divinity. According to Mr. Holmes, the entire system of the scrolls, frets, and other devices used in Chiriqui art have been derived from various parts of the body of an animal, probably the alligator, and he regards this system of ornamentation as indigenous to the district. In a separate article, the author treats of textile art in its relations to the development of form and ornament, and more especially with respect to the industries of the early American people.

The article on the Central Eskimo, by Dr. Franz Boas, although complete and admirable of its kind, has comparatively little interest for the English reader conversant with the results of Arctic research, since a very large and important part of the information given has been derived from the narratives of Franklin, Ross, Parry, and other more recent British explorers. Yet some additions have been made to our older knowledge of the Eskimo by Dr. Boas, who gives much interesting information regarding their tribal laws and customs, the musical art of the people, and their capacity for drawing; while he relates several curious tales and traditions, which present so remarkable a similarity to those of the Greenlanders and the Behring Straits' tribes as to make it probable that all these people are of one race.

The Rev. O. N. Dorsey, to whom the Bureau is indebted for the compilation of seventeen vocabularies of the different dialects used by the Oregon Indians, adds an interesting contribution to this volume, in which he describes the results of his visit, in 1883, to the Osages in the Indian Territory. During his short stay he obtained information regarding the existence of a secret society of seven degrees, in which a knowledge is preserved of the grades and general history of the various gentes and sub-gentes, with their taboo and names which are regarded with reverence and not spoken of. Owing to the strict secrecy usually maintained by members of this society, it was with extreme difficulty that he induced two of the initiated to recite to him the traditions referring to the mythic history of their tribe, which had been imparted to them on their initiation. These traditions, which the author gives with an interlinear translation, record the passage of the primæval Osages from higher worlds before they bore the semblance of birds, or had acquired from a beneficent red eagle the bodies and souls with which they alighted on the earth. The sacred chart on which their descent was symbolized by a river flowing beside a cedar, the tree of life, surrounded by sun, moon, and stars, was observed by Mr. Dorsey to be tattooed on the throats and chests of some of the elder men; but the younger Osages knew nothing of such symbols, and he was asked not to speak to them on the subject. From all he saw and heard among these and various tribes of Iowa and Kansas, he believes that in this traditional record of the descent of their gentes from different birds and animals, we have a clue not only to the names by which they are distinguished, but to the meaning of the chants and war-songs which only members of the seven degrees of their sacred societies have the right to sing.

It would appear that an arrangement by sevens is common to various kindred tribes, and there is reason for assuming that wherever mythic names or taboos are in use there are, or have been, secret societies or mysteries, which have been derived from early traditional history.

In an elaborate article by Prof. Cyrus Thomas, entitled "Aids to the Study of the Maya Codices," we have an interesting account of the far-famed Maya Codex, which was acquired by the Royal Library of Dresden in 1739, and a large portion of which was collated for Lord Kingsborough's great work on "Mexican Antiquities," of which it forms the larger part of the third volume. According to Dr. Thomas, this unique document consists not merely of one, but of several original MSS., while it presents no evidence, as often asserted, that its symbols, figures, and signs are to be accepted as alphabetical, or phonetic, characters, its series of dots and lines seeming to indicate a close relationship with the pictographic system in use amongst the North American Indians. He is of opinion that these series have a chronological significance, based on the method of counting time common to the Mexicans and Mayas, in which a religious, or hierarchical, cycle of 260 days was recognized, as well as the solar year calendar of 360 days in use among the people. This interpretation must, however, for the present rank as merely conjectural, although his elaborate analyses of the Maya symbols cannot fail to be of use to the few interested in the solution of the curious philological problem involved in the elucidation of this unique codex, to which special notice was first drawn by Alexander von Humboldt. His acquaintance with ancient South American MSS. enabled him to show that, while its symbolic characters presented a close affinity with those used by the Mexicans, the material of which the MS. was composed was the Mexican plant metl, *Agave mexicana*.

EXACT THERMOMETRY.

Traité pratique de la Thermométrie de précision. Par Ch. Ed. Guillaume. Pp. xv. and 336. (Paris: Gauthier-Villars, 1889.)

THE thermometer, practically as we now have it, is an instrument several centuries old, and by far the most popular of all scientific apparatus. Yet probably much less is generally known about it than about its companion implements the barometer and the telescope. The reason for this want of knowledge lies doubtless in the fact that the common use of the thermometer is chiefly for rough observations on the temperature of the air, and for this the ordinary instruments are sufficiently accurate as they leave the maker.

Meteorologists and physicians, however, occasionally have the zeros of their thermometers tested; and, for factory work, other points have sometimes to be examined. But in chemical and physical laboratories, investigations not unfrequently require that thermometers should be corrected with all possible delicacy, if the resulting measurement is to be exact and valuable. For such operations there has hitherto been no exhaustive guide; and M. Guillaume, whose ample experience in the Bureau international des Poids et Mesures is a guarantee for the practical value of what he writes, has done good service by issuing the present work at an opportune moment.